CROP TALK

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Corn Nitrogen Application - Assessing Potential Loss

by Greg Stewart, Corn Specialist, OMAFRA

Questions have surfaced more frequently than usual this winter about the potential loss of nitrogen from various N sources and application techniques. Let's dig for answers!

Question # 1

Weed 'n Feed:
Spraying UAN and pre-emerge herbicides in the same tank.

The most obvious advantage is that N application costs are zero if you plan on spraying the pre-emerge product anyway. This system can eliminate a pre-planting operation that might delay planting and moves it into a slightly more flexible post-planting window. If the UAN is sprayed on bare soil, the N losses (ammonia volatilization) will be dependent on temperature and rainfall after application. These N losses could be quite low (0-5%) if temperatures are cool (less than 20°C) or if rainfall occurs within 48 hours. In reduced tillage situations where more of the UAN is applied to crop residue, or if temperatures are warmer and rainfall absent, the N losses may be significantly higher (15%), so the technique should be avoided. A reasonable approach on tilled ground, would be to take the recommended rate and apply 8-10% more N for surface-applied UAN applications. If the N Calculator (refer to www.gocorn.net) recommended 120 lbs N/ acre, then moving to 130 lbs per acre buffers you against N volatilization losses. This could cost $8 per acre, which offsets some of the advantages of this approach.

Some producers have kept application accuracy high and application costs low by towing a cart and injecting UAN down coulters on the planter (refer to Figure 1). Some data suggests that banding UAN will result in higher yields than broadcast UAN. In a two year study at two Ohio locations, corn following corn yielded 9 bushels per acre better with banded UAN than with broadcast UAN.

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Figure 1. Dunlogon Farms of Stayner Ontario can bring 1,600 gallons of UAN (32%) in a tow-behind-cart in their attempts to keep application costs low and N losses minimized. N is banded 6 inches off the row on the corn planter.

Banded UAN produced 5 to 6 bushels per acre more corn than broadcast UAN in studies in Illinois as well.

Question # 2

Side Dress with the sprayer:
Can I apply UAN with my sprayer and 90 foot boom in early June to save time and cost? Will streamer nozzles eliminate volatilization losses? Do I use the same recommended rate as if I were sidedressing?

The most applicable research in this area has been done comparing planting time sprayed UAN versus dribbled-on UAN. Ammonia volatilization losses are lower for dribbling techniques (which should approximate streamer nozzles) compared to broadcast spraying UAN. The possibility of experiencing higher temperatures during early June increases significantly compared to early May. Therefore the risk of ammonia loss increases as well. The streamer nozzles will help but not eliminate the risk of N loss.

The best approach is to apply in late May-early June in an effort to avoid hot days (volatilization) and before the corn is beyond the 6-leaf stage (leaf burn). Since this is earlier than typical sidedress timing, and since there is potential for some N loss due to the surface application, go with the N Calculator recommended rate for planting time applications, not the sidedress recommended rate. On fine-textured soils, this will cost you more for N ($15/acre) compared to true sidedressing and offsets the benefit of the faster application.

Question # 3

Sidedress urea:
I can't source anhydrous ammonia in my area and urea would be the next cheapest source. Can I broadcast the urea in June into standing corn?

The ammonia volatilization risk is higher with urea than with UAN (UAN is only one-half urea). The potential loss from broadcast urea in June depends on a number of factors. The following conditions would all contribute to greater N losses from ammonia volatilization:

- high soil temperatures
- high soil pH (>pH 7.5)
- coarse soil texture
- low organic matter content
- high amounts of surface residue
- lack of rain for 10-14 days following application.

The research is quite variable in measuring losses from surface applied urea. It is substantially higher than surface applications of UAN and can reach 40% N loss. This means significant additional costs and the practice has few upsides. A more appropriate system would be to capture the efficiency advantages of sidedressing and the potential lower costs of urea by investing in a system to sidedress the granular product (refer to Figure 2).

Figure 2. Claussen Farms of Brucefield Ontario sidedress urea with an air cart in their efforts to capitalize on sidedress efficiencies and the cost advantages of urea over UAN. Note the applicator bar using coulters to incorporate urea in a skip row configuration.

Other Options

Other N sources that are specifically designed to reduce N losses are available that have not been discussed in this article. Relatively new products like poly coated urea (ESN) appear to be less susceptible to ammonia volatilization losses due to slower accumulation on the soil surface and less pH change around the particle. As more experience is gained with these products, they may become additional tools in maximizing N use efficiency.

Checklist For High Yielding Soybeans

by Horst Bohner, Soybean Specialist, OMAFRA

The Ontario Soybean Growers began a soybean yield competition in 2008. The results were impressive! The winner yielded 72.1 bu/ac near Seaforth. These yields are good examples that with the right weather, soil type, and management, large yields are possible in Ontario. With the big yields and excellent prices in 2008, some producers grossed over $1,000 per acre in their best fields. Maximum yields are crucial for high profits.

Consider the following checklist (Table 1) when growing soybeans for maximum yield potential. Some of these management practices are free, while others are quite costly. Each field must be assessed individually to make the most out of each input dollar. Try to address the number one yield limiting factor for each field.

Table 1 - Checklist For High Yielding Soybeans

		Avg Yield Gain (bu/ac)*
1	**Good Rotation** For a 100% yield potential, soybeans should only be grown 1 out of 4 years. A corn/ soy/wheat rotation is also excellent and provides a 98% potential.	4.2
2	**High Yielding Full Season Varieties** Check the soybean variety trial brochure (www.gosoy.ca) before picking a variety. For example, OAC Wallace yields 8 bu/ac more than OAC Bayfield.	1-8**
3	**Early Planting** An early-May planting date compared to late-May will provide extra yield.	3.8
4	**Narrow Rows at the Right Seeding Rate** 194,000 seeds/acre in 7.5" rows 177,000 sees/acre in 15" rows	3.5
5	**Seed Treatments** Seed treatments are more likely to give a positive result if planting is followed by cool wet weather or if disease and insects are present. This is more often the case with early planting.	1.9
6	**Inoculants** Response is likely to be higher if soils are sandy, pH is low, or the field has not been in soybeans for at least 5 years.	1.0
7	**Timely Weed Control** Always use a burn-down in no-till. If timely weed control is an issue, consider using an inexpensive residual partner, even with RR soybeans.	1-2***
8	**Foliar Insect and Disease Control** Controlling pests when they reach threshold numbers is key to high yielding soybeans. Scout fields regularly.	1-5***
9	**Fertilizer and Manure** P and K should be applied according to a soil test. However, manure can provide yield gains even if soil test levels are adequate.	1-6***
10	**Appropriate Tillage** When compaction is a problem, tillage is necessary for good yields. If the soil is in good shape, tillage will provide little yield response. On average, spring one-pass (pre-tillage) will provide a slight yield gain over no-till.	1.8

* Yield gains are based on Ontario research.

** Yield gains will vary depending on the varieties being compared

*** Yield gains from these factors are highly variable depending on soil test and pest pressure levels.

OSG Yield Contest
2009 marks the second year for the Soybean Yield Challenge, sponsored by the Ontario Soybean Growers (OSG).

To compete in the challenge, the soybean field size must be a minimum of 10 acres and the harvested plot must be a minimum of 1.5 acres of that same field. All soybean production practices are permitted. Conventional or genetically modified soybean seed is eligible, but all seed must be certified. Growers will be required to fill out a survey form stating production practices of the competition field, location of field and general weather data. Competition areas will be divided into three provincial zones based on maturity groups - Zone 1 – 2,700 HU and under; Zone 2 – 2,725 to 3,000 HU; and Zone 3 – 3,025 HU and above. Why not enter the contest to see what your yield potential is in 2009?

Wheat – Pay Attention to Detail!

by Peter Johnson, Cereals Specialist, OMAFRA

WHAM! After one year on top of the cash crop heap, wheat is falling right back down to the bottom rung of the "favourite crop" ladder. Don't fall into the rut of treating wheat as a rotation crop with "no money, no management". Paying a little attention to detail can tell you mountains about your management skills, and whether there are more potential bushels and profit out in that field than what you are going to harvest.

Plant Count Guidelines
Ask yourself "how many times have I measured off 17 feet, 5 inches of corn row and counted plants to know the population?" The answer is likely "lots"!! Have you EVER done that in your wheat crop? My bet is "no". Why? Well, perhaps partly because you didn't know what to look for. So let's fix that!

Some general guidelines for you to follow are below. It is assumed that everyone is in 7.5 inch rows, as virtually every no-till drill is set on this row spacing, and no-till cereals simply make sense.

- 20 plants/foot of row in wheat (17 plants/foot in barley, 14 plants/foot in oats)
- 50 stems/foot of row (main plus tiller stems at late-tillering stage)
- 38 heads/foot of row
- 16 spikelets/head
- 3 kernels/spikelet

These counts are a minimum for high yield potential. As you move through the growing season, these counts can be a good indicator if you should push that field for higher yield, or if you should limit inputs and cut your losses early.

Planting Depth

If you don't measure up, start looking for ways to improve your yields. Start with planting depth and emergence. Research in Manitoba by Gan, Stobbe and Moes showed that wheat plants emerging early (Day 1 to Day 3), yielded 1.4 times higher than plants emerging from Days 4 to 6, and 3.2 times higher than the yield of plants emerging late (Day 7 to 9). There is significant yield gain and variability in that data!

Starter Fertilizer

Next, check your fertilizer application. Seed-placed starter fertilizer will aid in plant uniformity. Phil Needham, a leading wheat consultant in the US, says his growers would stop planting rather than plant without seed-placed phosphorus. Big yields need that attention to detail.

There are lots of other causes for poor uniformity – including residue distribution, planting speed and moisture. Whatever the cause, you now have the tools to assess your performance. Get out there, walk those cereal fields, and see just how close your management comes to perfection!

Valtera - A New Herbicide For Identity Preserved (IP) Soybeans

by Mike Cowbrough, Weeds Specialist, OMAFRA and Dr. François Tardif and Dr. Peter Sikkema, University of Guelph

With IP soybean premiums ranging from $2 to $3/bu, the control of "IP premium killing" weed species is important!

Valtera, a newly registered pre-emergent soybean herbicide manufactured by Valent provides control of:

- Eastern black nightshade, whose poisonous berries stain IP soybean seed, making the crop unmarketable;
- Lambsquarters and pigweed, two abundant weed species that have reduced soybean yields by as much as 40% when herbicide programs have failed;
- Herbicide resistant populations of:
    - Eastern black nightshade (resistant to Pursuit),
    - Lambsquarters (resistant to Pursuit, Pinnacle and Sencor),
    - Pigweed (resistant to Pursuit, Pinnacle, Classic, First Rate and Sencor).

Currently Valtera is only registered for use on its own, or as a pre-plant tank-mix with glyphosate. Research conducted by the University of Guelph has shown that for a complete weed management program in IP soybeans, Valtera must be tank-mixed with either Pursuit or Conquest to control both annual grass and broadleaf weeds.

Valtera Strengths

- Eastern black nightshade, lambsquarters, pigweed species

Control of Other Weeds (according to U.S. label)

- Common and Mouse-eared chickweed, Canada fleabane

Valtera Weaknesses

- Annual Grasses (suppression only) and perennial weeds
- Cannot be applied in conventional-till soybean systems.

Mode of Action

Valtera is a group 14 herbicide (same mode of action as Reflex and Blazer).

Application Timing

Valtera **must be applied** before soybean emergence, either as a pre-plant or pre-emergence herbicide, from 30 days prior to planting up to three days after planting.

Use Rates and Precautions

Valtera (56 g/ac)
Valtera (56 g/ac) + glyphosate (0.67 L/ac or equivalent depending on formulation)

Crop Safety

Soybean tolerance to Valtera is maximized when the herbicide is:

- applied prior to soybean planting,
- applied to medium or heavy textured soils,
- applied to minimum tillage cropping systems.

In 2008 research trials, there was significantly more crop injury when Valtera was applied to conventionally tilled soybeans compared to no-till soybeans (Table 1). Soybean yields were not affected by the increase in observed crop injury.

Table 1. Soybean visual injury 3 weeks after the applications of Pursuit + Valtera* and Cleansweep

	% Visual Injury (3 weeks after application)	
Treatment	No-Till	Conventional Till
Pursuit + Valtera*	8	20
Cleansweep	12	3

Guelph and Woodstock, ON, 2008 (Dr. François Tardif, U of G)
* Valtera was applied the day of planting at the no-till site and 4 days after planting at the conventional till site.
Experimental treatment – currently not registered.

Where Does Valtera Have the Greatest Fit?

2008 University of Guelph research trials showed that Valtera improved weed control and soybean yields (Table 2) compared to other standard herbicide programs when the weed populations consisted of herbicide resistant weeds such as:

- Lambsquarters (LQ), *Sencor resistant*
- Redroot pigweed (RRPW) - *Pursuit, Pinnacle, Classic and FirstRate resistant*

Experimental tank-mix used and rates included:

- Pursuit (168 ml/ac) + Valtera (56 g/ac)
- Conquest A (230 g/ac) + Conquest B (43 g/ac) + Valtera (56 g/ac)

Table 2. Soybean yield and control of annual grass and herbicide resistant annual broadleaf weeds with Valtera tank-mixes compared to other standard herbicide programs

	% Visual Control				
Treatment	**LQ**	**RRPW**	**GFT**	**HCG**	**Yield (bu/ ac)**
Dual + Sencor (Figure 1)	49	100	100	100	41
Cleansweep (Figure 2)	87	79	85	93	47
Pursuit + Valtera* (Figure 3)	100	98	100	100	51
Conquest + Valtera*	100	100	98	100	53

Woodstock, ON, 2008 (Dr. François Tardif, U of G)
GFT = Green foxtail, HCG = Hairy crab grass
*Experimental treatments – not currently registered

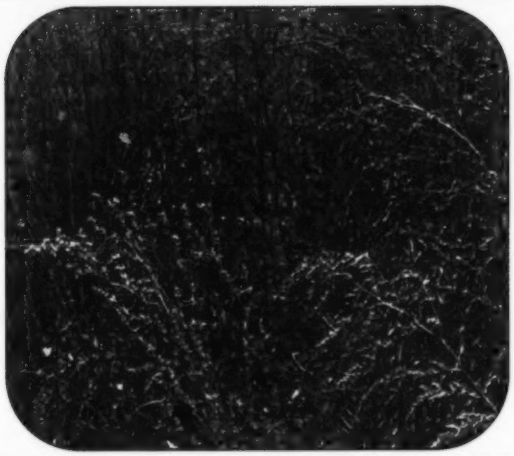


Figure 1. Dual + Sencor (Woodstock, ON - 2008)

Figure 2. Cleansweep (Woodstock, ON - 2008)

Figure 3. Pursuit + Valtera* (Woodstock, ON - 2008)
*Experimental treatment - not currently registered

What About Ragweed?

Valtera alone will only suppress common ragweed and will not control giant ragweed. Valtera tank-mixed with either Pursuit or Conquest will increase the control of common ragweed compared to either one of those herbicides on their own. To put things into perspective, at Ridgetown in 2008, Broadstrike Dual Magnum controlled common ragweed the best (refer to Table 3). Conquest + Valtera gave comparable control. If you have used Broadstrike Dual Magnum in the past and were happy with its control of common ragweed, Conquest + Valtera should offer similar control.

Table 3. Control of common ragweed (% visual control) and soybean yield (bu/ac) in 2008 with different soybean herbicide treatments

Treatment	Ragweed Control (%)	Yield (bu/ac)
Conquest	81	39
Valtera	76	39
Conquest + Valtera*	96	45
Broadstrike Dual Magnum	97	46

Location: Ridgetown, ON, 2008
(Dr. Peter Sikkema, U of G)
*Experimental treatment – not currently registered

For more information:
www.valent.com/canada

The Art of Interpreting Field Trials... or, Can Good Data Lead to Bad Results?

by Keith Reid, Soil Fertility Specialist, OMAFRA, Stratford

There are a number of reasons why a field crop trial fails to show a statistically significant response. The most obvious is that the treatment really doesn't have any effect! The trial results reflect what would normally be expected in the field.

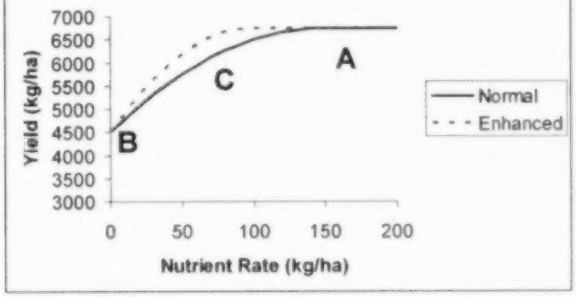
However, there are other situations where the treatment is actually having an effect that the trial is not been able to detect. These situations include:

- Large underlying field variability, so the treatment effect cannot be observed through the random variation
- Insufficient replication
- External effects increasing the random variability in the trial (e.g. wildlife damage)
- Conditions aren't right for the effect to be expressed (e.g. disease isn't present so there is no response to a fungicide treatment)
- Plot design did not allow the difference to be observed.

It is this final situation that I will be focusing on, as it is most relevant to many questions of nutrient use efficiency.

Consider the situation presented in Figure 1, where the response to a normal fertilizer is compared to the response to an imaginary "enhanced" fertilizer. The maximum yield for both is the same, but the enhanced fertilizer reaches the maximum yield at 100 kg of the nutrient rather than 150 kg. This would obviously mean a significant savings for a farmer who could achieve the same yield with two-thirds of the fertilizer rate.

Figure 1: Comparison of normal and enhanced availability fertilizer



Point A - On The Plateau
Comparisons of two products are set up using the least possible number of treatments, but remember that we don't know ahead of time what type of response to expect. This can lead to misleading trial results. One common trial design is to compare the usual rate of the normal fertilizer to the same rate of the enhanced fertilizer, as shown at point "A" on the figure. This trial would not show any difference between the products.

Point B – Zero Rate
In this particular example, adding a zero treatment ("B") would not make the difference any clearer, although it is certainly helpful where there is a difference in the maximum yield from each treatment. A common marketing ploy is to include the Normal fertilizer at the usual rate ("A"), with the Enhanced product at a reduced rate ("B"), and conclude that the Enhanced material is more efficient because it gave similar yield for less input. While this is correct in this example, this conclusion is accidental rather than firm proof because the same results would be seen if the rates for both products were on the yield plateau.

Point C – Expected Response Difference
The valid comparison that would show the difference between the two products would include both products at a rate where there is a difference in response, as at point "C". Since we don't know prior to the trial exactly where this point will be, the most reliable design includes multiple rates of both products so that a yield response curve can be drawn for each.

The take-home message from this is not that every trial needs multiple rates, but rather that the expected response from a given input needs to be considered in the design of the trial. The only design we can reject out-of-hand is the one where each product is used at single rates, but that are different between products, since it can never give unequivocal results. Trials where we expect an overall yield increase are valid with the zero plus high rate treatments. Where differences in nutrient efficiency are expected, however, it is important to include multiple rates of each treatment so that response curves can be drawn.

Can We Manage Alfalfa Stem Fineness With Varieties and Seeding Rate?

by Joel Bagg, Forage Specialist, OMAFRA

Hay producers want alfalfa that is fine stemmed, rather than course stemmed. This is thought to improve palatability (less "sorting" by livestock), intake, forage quality (digestibility) and marketability. Stem fineness is more important when alfalfa is harvested as dry hay rather than haylage. Hay producers are more likely willing to sacrifice some yield potential for an improvement in stem fineness if necessary, whereas haylage producers are not. Anecdotal differences between varieties and seeding rates with regards to stem fineness are often talked about, but without good data to support it. The East-Central Soil & Crop Improvement Association utilized an OSCIA Regional Grant to answer some of these questions.

Variety Differences
A side-by-side variety performance trial was set up at the farm of Eric Bowman, Enniskillen. This was a cooperative project shared with the University of Guelph and the Ontario Forage Crops Committee (OFCC). The trial included 49 commercially available alfalfa varieties side-by-side in 1 X 6 metre plots that were replicated 4 times These plots were harvested and evaluated for yield, maturity and stem diameter in Years 1, 2, and 3 following the establishment year.

Relative maturity of each variety was measured by sorting stems by stage and a "mean stage by weight" was calculated. Stem diameters of Stage 4 (late bud) were measured with electronic calipers to determine "stem fineness" when cutting at that stage. Maturity and stem diameter data was pooled with a similar trial at Elora. Varieties significantly different (p=0.05) for maturity and stem diameter are listed in Tables 1 and 2.

Table 1 – Alfalfa Varieties With Maturity Significantly Different Than The Trial Mean

Early (More Mature)	Late (Less Mature)
Enhancer	53V52
Stallion	Marquis
Starbuck	Amerigraze 401+Z
Satellite	Jolt
Forecast 1001	Dominion
	Approved
	Macon
	Guardsman II
	Reliance

Table 2 – Alfalfa Varieties With Late-Bud Stage Stem Diameter Significantly Less Than The Trial Mean

Fine Stemmed
Affinity+Z
54V54
2065MF
Reliance
Amerigraze 401+Z

Harvest timing and variety selection are both management options for producing finer stemmed hay. Harvesting any alfalfa variety at an earlier stage of development will result in forage that has a greater proportion of finer stemmed, less mature material. However, varieties also differ in their stem diameter as well as their maturity, so some varieties are finer stemmed at the same stage of maturity. Since there was not a high correlation with yield, this does not necessarily have to be sacrificed. Seeding early-maturing as well as late-maturing varieties can be an option to widen the first-cut harvest window.

Variety yield data was added to the composite index data published in the 2009 OFCC Forage Variety brochure (www.goforages.ca).

Seeding Rate

A seeding rate trial, similar to the variety trial, was seeded in 2006 under good conditions, and harvested in 2007 and 2008 to determine if an increased seeding rate increases stem fineness. Five varieties were planted at seeding rates of 5.5, 11, 16.6 and 22 kg/ha.

Table 3 – Effect of Alfalfa Seeding Rate On Maturity, Stem Diameter and Yield

	Seeding Rate (kg/ha)			
	5.5	11	16.6	22
Stage of Maturity (MSW)	3.7	3.4	3.2	3.1
Stem Diameter (mm)	2.7	2.7	2.5	2.6
Yield (tonnes/ha)	9.7	9.8	9.6	9.5

The alfalfa plots seeded at higher rates were less mature than the lower seeding rates. However, there were no differences in stem diameter at the same stage of maturity (late-bud). In other words, high seeding rates delayed maturity, and therefore reduced stem diameter on a given date of harvest, but not at the same stage.

Full Report

A full project report will be posted when available on the East-Central SCIA website: www.regionalscia.org/.

Carbon Credit (Offset) Trading – What's Going On?

by Adam Hayes, Soil Management Specialist – Field Crops, OMAFRA

There was a lot of talk early in the decade about farmers getting paid for storing carbon in the soil and for implementing other "climate change initiatives" on the farm. Then there was a period where not much was heard. In the past year, there has been a lot in the news again about "carbon trading".

First, let's look at what is happening in the big picture. Many countries, including Canada, signed on to the Kyoto Accord and are working towards achieving their targets. There are carbon exchanges where carbon credits are being traded in Europe, Chicago and in Montreal. There is a global movement pushing for harmonization of the carbon markets.

The North American Perspective

In North America there are three climate groups of states and provinces that have come together to coordinate efforts in the reduction of greenhouse gas (GHG) emissions. It is quite possible that the three groups will merge into one. Although the United States did not sign on to Kyoto, there are many states that have been addressing climate change. The Canadian government will regulate carbon dioxide through the

Environmental Protection Act beginning in January 2010. An offset trading system will be set up, as well as a technology fund that can be utilized by emitters who are above regulated levels.

Climate Change Initiatives in Canada
Many provinces have been active in Canada. British Columbia announced a carbon tax in 2008. This adds a direct cost to those who are emitting greenhouse gases. Alberta established a Carbon Offset Trading Market in 2007. Trading is limited to Alberta. Current protocols relate to beef feeding, pork, composting, biogas, tillage, heat recovery, green energy generation and others. British Columbia, Alberta, Ontario and Quebec are part of one of the four climate groups and Saskatchewan is an observer.

Ontario signed an agreement with Quebec in 2008 to develop a cap and trade system. Ontario is currently involved in a pilot project to test draft tillage and nitrogen protocols. The government has also pledged to close all coal fired plants by 2014 and is currently exploring fueling some of them with biomass.

Carbon prices last year traded at $6/tonne of carbon dioxide equivalent in Chicago, $11/tonne in Montreal and $26/tonne in Europe. Canadian government studies predict the price could increase to $60/tonne by 2018. As the price for a tonne of carbon increases and the rules for trading become clearer it looks like opportunities may open up for Ontario agriculture to be part of the solution and potentially generate some revenue at the same time.

Improving Yield of Second Year Soybeans Project Update

St Clair Region Soil and Crop Improvement Association Partner Grant Project

The purpose of this project is to determine the value of a rye or winter wheat cover crop in fields where soybeans follow soybeans. The first year of the project saw a significant yield increase to the cover crops on a sandy loam site and no response on a clay site. The sites in the second year of the project were all on clay or clay loams soils. The cover crops were planted in the first half of October and growth the following spring was good. However the soybean yields did not show any difference between the cover crops and the check. The project is continuing for one more year.

Increasing Pasture Legume Content

by Jack Kyle, Grazier Specialist, OMAFRA

There are a number of advantages to including a significant level of legume content in pastures. Legumes provide nitrogen, improve yield and increase forage quality. The most common legumes used in Ontario pastures are alfalfa, white clover, trefoil and red clover. Productive pastures require regular maintenance.

Rotation is one very effective way to improve pasture productivity. Improving the species mix in the pasture is also important. There are many advantages to including legumes:

- Nitrogen provided to the soil by legumes encourages grass growth as well as supporting the legume growth.
- Legumes have more consistent production during the mid-summer period. Some of the legumes, particularly alfalfa and trefoil, are deep-rooted and have better tolerance for the warm, dry conditions generally experienced in July and August. Grasses grow well during May and June, but July and August production is typically reduced.
- Legumes hold their feed quality longer than grass species, so pasture quality is more consistent throughout the summer grazing season.

Alfalfa Establishment
Alfalfa in the most productive of the legume species, but also has several drawbacks. Establishment of alfalfa requires excellent seed-to-soil contact and very little competition during the seedling stage. Most pastures with a significant level of alfalfa are established through conventional seeding, either planted into a tilled seedbed or no-tilled into a killed sod.

Frost Seeding Clovers & Trefoil
Clovers and trefoil can be established in a manner similar to alfalfa, or they can be frost seeded or over seeded into the pasture. In an established pasture, this is the easiest and likely the best option to increase the legume content. Frost seeding is done by broadcasting seeds on frozen ground in late winter or early spring. The best success has been reported with white clover, red clover and trefoil using this method.

The generally accepted seeding rate is 1-3 lbs of seed per acre, although there are no hard and fast rules as to the amount. White clover is often frost seeded at 1 lb/ acre, trefoil at 2-3 lb/acre and red clover at 3-5 lb/acre.

The seed should be broadcast when the ground is still frozen. The freeze-thaw action during the spring will help to establish seed-to-soil contact. This broadcasting can be done with a broadcast seeder on an ATV or snowmobile.

Results are not always evident in the first year, but by the second season you will generally see an increase in the legume content of your pasture. White clover and trefoil can also be mixed in the livestock mineral/salt during the grazing season. The livestock will then spread the seeds across the pasture with the manure. This method may not be as effective but it is low cost and easy.

For further information refer to:

www.omafra.gov.on.ca/english/crops/field/news/croptalk/2007/ct-0307a8.htm
www.omafra.gov.on.ca/english/crops/facts/98-071.htm

Farming Organically

by Hugh Martin, Organic Crop Production Program Lead, OMAFRA

Recent statistics are showing continued growth in the number of organic farmers in Ontario. In 2007, there were 569 certified organic farms in Ontario with approximately 100,000 acres of crops and pasture. This land was 48% in grain and oilseed crops, 40% in hay and pasture, and about 5% in fruit, vegetables and herb crops. The balance includes maple, nut trees, etc. Organic farming represents about 1% of the farmland and 1% of the farms in Ontario.

Economics
Organic corn, soybeans and wheat are priced similar to last year and slightly more than double the 2009 prices of their conventional counterparts. Organic crops yield about 75% of the conventional crops, depending on crop, management skills, weather, etc . Organic crops often have net returns per acre of at least double their conventional counterparts, and in some cases more than that.

Marketing of organic crops will take some research to seek out the dealers you want to work with. There are numerous buyers for organic grains. Organic prices are not tied to the Chicago Board of Trade, so there tends to be more stability in the market. Prices are affected by supply and demand of organic commodities, but for many years supply has not been able to meet demand. Even in the current market, prices have been stable and market demand is still strong.

Certification
For field crops, certification is generally required by buyers. This is true of both processing buyers for food products, as well as feed buyers. Organic livestock must be fed certified feed if the livestock are certified organic. Certification costs range from $500 to $1,000 or more per year per farm, depending on the size and complexity of the farm. Good production records are required as part of the certification and annual inspection process. However, these records are very similar to what is required for other traceability programs. As of June 30, 2009, certification will be part of the new Canada Organic Regime that will be managed by the Canadian Food Inspection Agency. Organic certification bodies will be accredited to manage the certification process.

Weed and Nitrogen Management
The biggest production issues for organic field crop farmers are weed management, and nitrogen management in corn and cereals. The key to successfully managing weeds is to have a good crop rotation. Secondly, be timely with mechanical weed control, starting right after planting before the crop emerges. For corn and soybeans, this requires weekly passes over the field with a rotary hoe, weeder harrow or inter-row cultivation. This will likely cost less in total than a typical herbicide program. The third step is to be able to walk the fields with a hoe as needed to eliminate weedy patches and outbreaks or troublesome weeds. The key is to keep on top of your weeds and to prevent weeds from going to seed as much as possible.

Nitrogen is largely managed with cover crops such as red clover. Red clover is fairly easy to establish on most organic farms. Farms with access to manure can also use it to supplement the nitrogen and maintain phosphorous and potassium if those nutrients are low. However, high rates of manure are discouraged in order to minimize weed pressure and environmental issues.

Have a good look at organic. The sector has grown 15—20% per year for over 20 years. It takes some effort but your successes can be very rewarding.